

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 11-029378

(43)Date of publication of application : 02.02.1999

(51)Int.Cl.

C04B 41/87

C01G 23/04

(21)Application number : 09-197982

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(22)Date of filing : 09.07.1997

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## (54) CERAMIC COMPOSITE MEMBER

### (57)Abstract:

PROBLEM TO BE SOLVED: To obtain a member, useful as the one used in a production process for semiconductors and excellent in dimensional retention accuracy for a stress and a temperature changes, suppression of damage to a silicon wafer and prevention of particles from sticking by forming a titanium oxide film of a specific composition on the surface of a silicon nitride or sialon having a specific average thermal expansion coefficient as a substrate and composing the member.

SOLUTION: This ceramic composite film is composed by forming a  $\text{TiO}_2\text{-x}$  [ $2 > (\text{x}) > 0$ ] film or a film comprising a mixture composition of the  $\text{TiO}_2\text{-x}$  and  $\text{TiO}_2$  having the thickness of preferably  $\geq 1\%$  that of silicon nitride or sialon as a substrate which is a dense sintered compact, obtained by adding a sintering assistant, e.g.  $\text{Y}_2\text{O}_3$ ,  $\text{Al}_2\text{O}_3$  or  $\text{MgO}$  in the total amount of  $\geq 15\%$  to the silicon nitride or sialon and sintering the resultant mixture by atmospheric sintering, gas pressure sintering or hot isostatic press (HIP) sintering and having  $\geq 95\%$  relative density and  $\geq 1.5 \times 10^{-6}/^\circ\text{C}$  average thermal expansion coefficient between 20 and  $50^\circ\text{C}$  on the surface of the substrate.

## LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

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